

Further, the Examiner has rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over the Sonderegger, Inoi, or Ishikawa patent in view of U.S. Patent No. 5,245,734 to Issartel ("the Issartel patent") or U.S. Patent No. 5,519,279 to Zimnicki ("the Zimnicki patent").

Amongst newly added method claims 18 to 26, claim 18 is in independent form, with claims 19 to 26 ultimately depending from claim 18. Introduction of new method claims 18-26 is proper since the new method claims overcome the rejection of product claims 14-16. (See MPEP §820). No new matter has been added, and Applicants respectfully submit that the new claims are in condition for allowance for the reasons set forth below.

II. REJECTION OF CLAIMS 14 AND 17 UNDER 35 U.S.C. § 102(a) AS BEING ANTICIPATED BY SONDERREGGER, INOI, OR ISHIKAWA

The Examiner has rejected claims 14 and 16 under 35 U.S.C. § 102(a) as being anticipated by the Sonderegger patent, the Inoi patent, or the Ishikawa patent.

To reject a claim based on anticipation, an individual reference must disclose each and every element as set forth in the claim. *Verdegaal Bros. V. union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). The examiner must clearly set forth the grounds for rejection and should not resort to omnibus rejections, which conclusorily state that a claim is rejected without giving any supporting reasons. MPEP § 707.07(d).

The Examiner has rejected claims 14 and 16 as being anticipated by Sonderegger, Inoi, or Ishikawa, but has not given a single reason that supports this conclusion. Such omnibus rejection is clearly improper. Nonetheless, Applicants have canceled claims 14 to 16, effectively mooting the Examiner's rejections. Furthermore, Applicants respectfully assert that new claims 18 to 26 are not anticipated by either the Sonderegger or Inoi patents, and

that the Ishikawa reference is not an effective prior art against the present invention.

New claim 18 recites a method for the parallel manufacturing of a plurality of piezoelectric actuators, comprising the steps of: (1) manufacturing a plurality of . . . foils made of . . . piezoelectric ceramic material; forming a plurality of pairs of openings through the foils, each pair of openings consisting of a first connecting opening and a second connecting opening, each pair of openings being assigned to one of the actuators; (2) coating one surface of each of the foils with a plurality of electrodes, at least one electrode being assigned to each actuator in each foil, each pair of connecting openings penetrating the foils through one of the electrodes, each electrode including a cut-out that surrounds one of the first and the second connecting openings; (3) stacking the plurality of foils into a stacked arrangement so that the first and second connecting openings of each foil are vertically aligned with the first and second connecting openings of remaining foils, a layer sequence of the foils being selected such that the cut-outs surround the first connecting openings in a first set of alternate layers of the foils and the cut-outs surround the second connecting openings in a second set of alternate layers of the foils; (4) introducing an electrically conductive paste into the connecting openings, whereby the electrodes on each set of alternate layers of the foils become electrically connected; and (6) separating the stacked arrangement into individual actuators.

Sonderegger provides a plurality of piezoelectric plates stacked on top of each other, each plate having a positive surface and a negative surface. In one embodiment, two conductive holes are provided in each plate in such a way that, when the plates are stacked, one hole electrically connects the negative surface of every plate and the other hole electrically connects the positive surface of every plate. As such, the plates of alternate layers disclosed in

Sonderegger are not electrically isolated, as required by claim 18. Further, Sonderegger does not disclose, teach, or suggest at least the following limitations as required by new claim 18:

1. "coating one surface of each of the foils with a plurality of electrodes . . ." (emphasis added);
2. ". . . a layer sequence of the foils being selected such that the cut-outs surround the first connecting openings in a first set of alternate layers of the foils and the cut-outs surround the second connecting openings in a second set of alternate layers of the foils" (emphasis added);
3. "introducing an electrically conductive paste into the connecting openings . . ."; and
4. "separating the stacked arrangement into individual actuators."

Further, the Inoi reference is not 102(a) prior art with respect to the current application under examination and therefore cannot be relied upon by the examiner to form a 102(a) rejection. Inoi is a U.S. Patent that issued March 2, 1999. The current application is a divisional application of a national phase filing (filing date of December 27, 1999) of PCT/DE98/03174 filed on October 30, 1998, and the PCT application in turn claimed priority from DE 197 57 877, which was filed on December 24, 1997.

Under 35 U.S.C. § 102(a), a person shall be entitled to a patent unless "the invention was patented or described in a printed publication in this or a foreign country, before the invention thereof by applicant for patent." Since Inoi issued almost 2 years after the December 24, 1997 priority date, Inoi is not a 102(b) reference. However, since Inoi was filed on June 11, 1997, Inoi is a potential 102(e) reference and, as such, Applicants treat Inoi as such.¹

¹ Since present application has an effective filing date prior to November 29, 2000, pre-AIPA §102(e) applies to present application.

Inoi is directed to piezoelectric layers of a laminated transformer including outermost ceramic layers having first openings defined therein for connection to inner electrodes. However, Inoi does not disclose, teach, or suggest at least the following limitations required by new claim 18:

1. "forming a plurality of pairs of openings through the foils, . . . each pair of openings being assigned to one of the actuators"; and
2. "separating the stacked arrangement into individual actuators."

Turning to the Ishikawa reference, this reference is not prior art with respect to the present application. Ishikawa was issued on January 9, 2001 and has a 102(e) date of June 26, 1999. Ishikawa is a national phase filing based on a PCT application which was published January 22, 1998.

The Ishikawa reference is not a 102(a) reference with respect to the present application because neither the issue date of the patent (i.e., January 9, 2001) nor the publication date of the PCT application (i.e., January 22, 1998) occurred more than one year prior to the priority date of the present application (i.e., December 24, 1997).

Further, the Ishikawa reference is not a 102(e) reference with respect to the present application because the 102(e) date of Ishikawa (i.e., June 26, 1999) is not before the priority date of the present application (i.e., December 24, 1997).

Therefore, Applicants respectfully assert that Ishikawa is not prior art with respect to the present application and therefore request that the Ishikawa reference be removed from consideration.

For at least the foregoing reasons, Applicants respectfully assert that new claim 18 is not anticipated by the Sonderegger, Ishikawa or Inoi reference. Further, since new claims 19 to 26 ultimately depend from claim 18,

Applicants respectfully assert that new claims 19 to 26 are not anticipated for the same reasons.

III. REJECTION OF CLAIM 15 UNDER 35 U.S.C. § 103(a) AS BEING UNPATENTABLE OVER SONDEREGGER, INOI, OR ISHIKAWA IN VIEW OF ISSARTEL ZIMNICKI

The Examiner has rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over the Sonderegger, Inoi, or Ishikawa patents in view of the Issartel patent or the Zimnicki patent. The Examiner asserts that Zimnicki and Issartel teach what Sonderegger, Inoi, and Ishikawa do not, i.e., using a grid of electrodes to promote better strength in inter-layer bonding. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to strengthen the Sonderegger, Inoi, or Ishikawa piezoelectric stacks using the grid structure of Zimnicki or Issartel.

As stated above, Applicants have canceled claim 15 and, as such, the Examiner's rejection is now moot. Further, it is respectfully asserted that new claims 18 to 26 are not rendered obvious by the Sonderregger or Inoi patent in view of Issartel or Zimnicki for at least the following reasons.

First, as stated above, Ishikawa is not prior art with respect to the application currently under examination. As such, Ishikawa may not, alone or in combination with other references, form the basis for an obviousness rejection. To the extent that the Examiner has relied on Ishikawa to support his rejection of claim 15, Applicants respectfully request Ishikawa be removed from consideration.

Second, the Issartel and Zimnicki references simply do not cure the deficiencies of Sonderregger or Inoi. Neither Zimnicki nor Issartel discusses the following limitations of new claim 18: (1) "forming a plurality of pairs of openings through the foils, . . . each pair of openings being assigned to one of the actuators"; (2) ". . . a layer sequence of the foils being selected such that the cut-outs surround the first

connecting openings in a first set of alternate layers of the foils and the cut-outs surround the second connecting openings in a second set of alternate layers of the foils"; and (3) "introducing an electrically conductive paste into the connecting openings"

For at least the foregoing reasons, it is respectfully asserted that new independent claim 18 is not rendered obvious by the Sonderegger, Inoi, or Ishikawa patent in view of the Issartel patent or the Zimnicki patent. Further, since new claims 19 to 26 ultimately depend from claim 18, Applicants respectfully assert that claims 19-26 are not rendered obvious for the same reasons.

IV. CONCLUSION

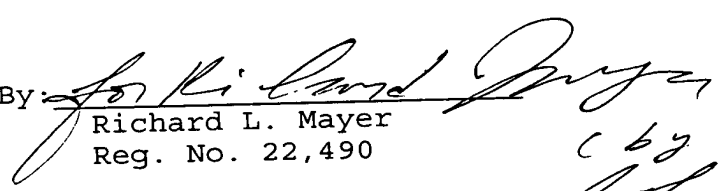
It is therefore respectfully submitted that new claims 18 to 26 are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited. The Examiner is invited to contact the below-named attorney for any issues in the present application.

Respectfully submitted,

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